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DISCOURSES

ON

COLD AND WARM BATHING;

WITH

REMARKS

ON THE

EFFECTS OF DRINKING COLD WATER

IN

WARM WEATHER.

BY JOHN G. COFFIN, M. D.

BOSTON:

PRINTED BY JOHN ELIOT.

1818.

DISTRICT OF MASSACHUSETTS, TO WIT.

District Clerk's Office.

BE IT REMEMBERED, that on the nineteenth day of August, A. D. 1818, and in the forty-third year of the Independence of the United States of America, John Eliot of the said district has deposited in this office the title of a book, the right whereof he claims as proprietor, in the words following, *to wit* :

Discourses on cold and warm bathing; with Remarks on the effects of drinking cold water in warm weather. By John G. Coffin, M. D.

In conformity to the Act of the Congress of the United States, entitled, "An Act for the encouragement of learning, by securing the copies of maps, charts and books to the authors and proprietors of such copies, during the times therein mentioned;" and also to an Act entitled, "An Act supplementary to an Act, entitled, An Act for the encouragement of learning, by securing the copies of maps, charts and books, to the authors and proprietors of such copies during the times therein mentioned; and extending the benefits thereof to the arts of designing, engraving and etching historical and other prints."

JOHN W. DAVIS,
Clerk of the District of Massachusetts.

ADVERTISEMENT.

THE principles of bathing have been but little studied, or the practice of it rationally adopted in the United States; less indeed than our general advancement in civilization, or the present improvement in the science of preventing and curing diseases, would lead one to expect or desire.

In the attempt to bring the subject of bathing before the public, in its true and acceptable form, I first read these remarks publicly to such persons as were disposed to hear them, in different places; and though the subject was new, and unknown, and neglected, I had the happiness to find, or at least to imagine, that all who listened, became interested, and, on reflection, converts to the good cause. This has strengthened an opinion I have entertained, that if the attention of the public could be so far secured as to lead them to study the theory of bathing, and properly to commence the practice, they would never after relinquish its use. The above mode of proceeding has brought the topic in question more fully into view than the printing of a book is frequently able to effect.

At first I did not think of publishing these discourses, but as many persons have expressed a wish to own them,—as there is a prospect of their being read, and thus of accomplishing more perfectly my original design in bringing up the subject, I shall now cheerfully print them.

I am sensible that this little work might be greatly enlarged and thereby rendered more valuable to the medical student and practitioner ; but as my purpose is to offer merely such facts, illustrations, and precepts, as shall be sufficient to invite and enable the well only, to derive from the bath, cold and warm, the pleasures and advantages that attend its due application,—and as a small and cheap book, if it has merit, is more likely to circulate extensively, than a larger and more expensive one, I have thought it best to publish these essays with very little addition or alteration from the state in which they were delivered.

To those who wish to pursue the subject further, and to understand the character of bathing as a *remedy*, as well as its effects as a means of preserving health, and of preventing disease, I would recommend the following works :

1. Currie's Medical Reports, &c.
2. A. P. Buchan's Practical Observations on Sea-bathing, and on Warm Baths.
3. John Gibney's Practical Observations on cold and warm Sea-bathing.

All these publications have appeared within a few years, in England. Of the sentiments, and sometimes of the language, of these excellent writers, I have made a free use.

The remarks on the effects of drinking cold water, will, I hope, be of some use.

J. G. C.

Boston, August, 1818.

A
DISCOURSE
ON
COLD BATHING.

THE enjoyments and advantages of health are so numerous and so generally acknowledged, that I presume any thing which has a tendency to improve and secure this great possession, will not be regarded as unworthy of notice. In this persuasion permit me to invite your attention to the subject of cold bathing.

The practice of cold bathing is becoming somewhat more common in this place than it has been, and is gaining something in the public estimation and favour. But in order to make it still more general, it seems requisite to review and correct some popular notions respecting it, as well as to diffuse more extensively the information necessary to render it at once safe, pleasant, and beneficial. Amidst the busy occupations that engage our time, or the unprofitable vacuity that consumes it, we do not always recollect how much we are indebted to our ancestors for the treasures we inherit, nor how much posterity will be affect-

ed by the part we may act, in the progress of society.

Every age is destined to receive the customs which time has established,—but a rational respect for the years that are past, does not require that we should hail as perfect all the traditions and usages of antiquity.

So far from this, it is incumbent on each succeeding generation, to examine with firmness and impartiality, the opinions and practices which time has matured; to transmit with improvement such as are useful, and to reject, without the weakness of hesitation or regret, such as retard the advancement of human affairs. This duty is peculiarly incumbent on the present race of Americans; men who owe more to their country and themselves,—more to their fathers and their children, than any other men, because they are more favoured, and privileged, and free, than any other people.

As a nation we have the rare opportunity of deciding the just value of liberty, by the use we make of it; by employing, under its protection and enjoyment, the resources we possess, for our own well-being, and the happiness of those, whose happiness it is within our power to promote.

To bring these remarks to the subject before us, we learn from history that bathing has been practised from the earliest periods of society, among the inhabitants of every nation, either as a religious ceremony, as a means of

preserving cleanliness, or as a source of comfort and pleasurable gratification. For the latter purposes, in the warmer climates, nature first prompted its use, and hence arose a knowledge of its salutary effects in contributing to general health. Indeed the various accounts we have of this custom, from the remotest times, among savage as well as refined people, fully prove, not only that it is of very high antiquity, but that it was almost universally followed. To enlarge however on this part of the subject, would be foreign from the objects of this essay. It is sufficient to remark, that what was introduced to gratify the senses, was continued from the same motive. From this circumstance it has arisen that its abuses have been so numerous, and that they have taken extensive and deep root; the regulations under which it was followed, as a luxury, by no means pointing out the principles which should direct its use, either in health or sickness. So erroneous has been the theory which has governed the practice in this country, that it has never been generally adopted,—and this indeed could never have been expected, if we advert to the many accidents which have arisen from an improper mode of conducting the process.

I shall confine myself at present to the external use of cold water, and this chiefly as a means of improving health and preventing disease, rather than as a remedy. I shall attempt to remove some very current misapprehensions

on the subject, and to offer such directions as I hope may prove sufficient to render the cold bath productive of all the good effects of bathing, when properly managed; and with a certainty of avoiding those unhappy results which are daily occurring from the influence of mistaken views relative to this mode of cultivating health. Those who turn their attention to the subject of cold bathing, with a desire to understand it, will soon be led to make this enquiry, In what temperature of the body are we to enter the water, when we are warm, or when we are cold? If we consult public opinion in this case, the answer will be, you must not bathe when warm lest you be injured by a sudden reduction of heat, or change of temperature. What confidence is to be placed in this response, we shall see in due time.

This is an important question, and the effects of bathing will be very much influenced by the solution of it we may adopt.

* Concerning the peculiar state of the living body which renders it most safe and prudent to venture on an immediate immersion in the cold bath, erroneous notions more generally prevail, than with regard to any other circumstance connected with the practice of bathing.

Like many other opinions relating to the conduct of the healthy, as well as to the treatment of the sick, which are now considered as popular prejudices, these errors seem to have

* A. P. Buchan's Pract. Obser. &c. p. 58.

emanated from medical doctrines, which were at some former period generally received, but which have since been discovered to originate from mistaken views of the laws by which the animal economy is regulated.

Frequent examples of dangerous, and even fatal, effects having been observed to take place in consequence of drinking cold fluids, or of plunging into cold water after having been heated and fatigued by violent and protracted exercise, it seemed to be a fair conclusion, that the previous heat of the body, was the real cause of the mischief; and it came to be a sort of aphorism, apparently sanctioned by experience, that no person ought either to drink, or to bathe, in cold water, while the warmth of the system was by any means, raised above the usual standard.

From this essential error, in conformity to which not a step can be safely taken, a most pernicious doctrine has been deduced,—that by waiting till they became cool, persons who had been previously heated by exercise, might then bathe with impunity.

The situation of the body while cooling, after having been heated by exertion, is as far removed from that state in which it is most safe to take the cold bath, as can well be imagined. Feebleness and debility are then fast approaching, and the vital energy is incapable of resisting the further temporary weakening effects of the cold immersion, which, instead of being followed by the genial glow of

health, is then more likely to induce a dangerous, perhaps a fatal, torpor.

To bathe in this state of the system may be compared to bathing in the cold stage of a fit of intermitting fever. The progress of this disease, as is well known, may often be arrested by the affusion of cold water during the hot stage of the paroxysm; but were the same application to be made in the cold stage of a fit, the consequence might be, the immediate extinction of life.

But though it is attended with much danger to go into the water of a temperature so low as that of the sea, or large bodies of fresh water, when the system has been exhausted by fatigue; it by no means follows that it is improper to bathe during the permanence of that warmth which has been produced by moderate, or even pretty free, exercise. In the earlier stages of exercise, before perspiration has dissipated the heat, and fatigue has debilitated the living power, nothing is more safe than the cold bath. This is so true that infirm persons are now, with great propriety, directed to use such a degree of exercise before bathing, as shall produce some increased action of the heart and blood vessels, with some increase of heat, in order that a sufficient reaction under the shock may thus be secured. On this subject the late Dr. Currie observes, that "persons heated and beginning to sweat, often think it necessary to wait on the edge of the bath till they are perfectly cooled; and

then plunging into the water, feel a sudden chilliness that is alarming and dangerous. In such cases the injury is imputed to going into the water too warm, whereas in truth it arises from going in too cold. But though it be perfectly safe to go into the cold bath in the early stages of exercise, nothing is more dangerous than this practice, after exercise has produced profuse sweating and terminated in languor and fatigue; because in these circumstances the heat is not only sinking rapidly, but the system parts more easily with the portion that remains."

My own experience agrees entirely with these sentiments of one of the best writers on the use of cold and warm water.

For several years past, from May till November, I have been in the habit of walking, or riding on horseback, freely till 12 or 1 o'clock of the day, hastening to the water's edge, and of plunging into it with the least possible delay, and in no instance have I had cause to regret the practice, but on the contrary have uniformly found it—grateful and invigorating.

On many of these occasions, as must be imagined, the temperature of the body was very considerably augmented, both from exercise and atmospheric heat, and sometimes there was a free perspiration.

But while the body remains strong and an elevated warmth is sustained by a continued operation of the calorific powers of the system, pretty copious perspiration, at its com-

mencement, forms no objection to cold bathing, if I may be allowed to trust my own feelings and trials. By the aid of a little previous exercise, which has quickened the motion of the blood and raised the temperature of the body, I have taken the shower bath, after it became too late to bathe in the sea, during every month of the last winter and spring, with pleasant and salutary effects.

We are informed, "that on the *Campus Martius*, the exercises of the Roman youth were carried on with all the vehemence of emulation. Swimming formed a part of these exercises, and generally terminated the foot-race. The youthful candidates in this exercise directed their course towards the river Tiber, and plunged headlong into the stream.

Sometimes the contention did not terminate till they had swum across the river twice. Hence it will be seen that they were accustomed to immerse themselves in water in the very fervour of their exertions, when the heat was preternaturally great; and not after the body was cooled by perspiration or exhausted by fatigue.

In this situation the practice was safe, without taking into consideration, that the persons following it, were in the flower of life, fortified by early habit, and partly defended from the shock of immersion by the inunctions which seem to have been generally used among the Romans, before the cold, and after the hot bath; and which were particularly employed

by the *athletae*, or wrestlers, of Greece and Rome in all their exercises.

The circumstances under which the emperor Alexander plunged into the Cydnus were different in many essential points, and so were the effects.

He had marched at the head of his troops to seize a pass in Mount Taurus, necessary to facilitate his passage into Cilicia. . . His whole march, which probably continued several days, was attended with extraordinary exertion, not from the nature of the country only, but also from the pressure of circumstances.

It was at the close of this great enterprize, according to the testimony of all the historians, that the conqueror, advancing into Tarsus at the head of his troops, covered with dust and sweat, and exhausted with long continued toil, stripped himself in the sight of his army, and dove into the pure and cold waters of the Cydnus, which ran through the city.

The symptoms that followed are described with sufficient minuteness and precision. He had scarcely entered the water when his limbs became cold and stiff; he lost his colour, and the vital warmth was rapidly declining; his attendants drew him from the water almost senseless, and apparently dying.”*

These consequences were such as might now be anticipated from what has been said.

The following account is full of instruction; it is taken from the work of Dr. Currie.

* Currie.

“On the first of September, 1778, two students of medicine at Edinburgh set out on foot, on a journey,—a considerable part of which lay along one of the rivers of Scotland. They started by sunrise, and proceeded with alacrity in the cool of the morning. At the end of eight miles they breakfasted, rested for an hour, and then resumed their journey.

The day grew warm as it advanced, and after a march of eight miles more, they arrived heated, but not fatigued, on the banks of the river abovementioned, about eleven in the forenoon. Urged by the fervour of the day, and tempted by the beauty of the stream, they stripped instantly and threw themselves into the river. The utmost refreshment followed, and when they returned to the neighbouring inn, this was succeeded by a disposition to sleep, which they indulged.

In the afternoon they proceeded, and travelling sixteen miles further at a single stretch, came to the inn where they were to sleep, a little after sunset. The afternoon had been warm and they sweated profusely; but the evening was temperate and rather cool.

They had travelled for some miles slowly, and arrived at the end of their journey stiffened and wearied with their exercise.

The refreshment they had experienced in the morning from bathing, induced one of them to repeat the experiment, and he went perfectly cool into the same river, expecting to relax his limbs in the water, and afterwards to enjoy

profound sleep. The consequences were very different.

The Tweed which was so refreshing in the morning, now felt extremely cold; and he left the water hastily. No genial glow succeeded, but a feverish chill remained for some time with small frequent pulse, and flying pains over the body.

Warm liquids and friction brought on at length considerable heat, and towards morning perspiration and sleep followed.

The next day about noon they proceeded on foot, but the traveller who had bathed was extremely feeble; and though they had to perform a journey of a single stage only, as some part of it was difficult and mountainous, he was obliged to take the assistance of a passing carriage. It was several days before he recovered his usual vigour.

It is unnecessary to point out the application of these incidents to the principles already advanced,—as the fact is sufficiently established, that the power of bearing cold without injury, is in proportion to the increase of animal heat before the exposure to cold.”

Having pointed out the only state of the system in which it is safe to enter the cold bath, we are brought to the enquiry, how long is it best to remain in it?

To determine how long it is proper to continue in the water, and whether it be preferable to plunge once only, or to repeat the immersion several times, has more influence on

the ultimate utility of bathing, than might be supposed, on a slight view of the subject.

While augmented warmth, vigour, and refreshment, are the constant result of a single plunge, it has been often remarked, that the same person, by returning several times into the water, has at last become so enfeebled as to walk with difficulty, and has suffered headache, chilliness, and lassitude for the remainder of the day. After leaving the water, I have noticed that if a limb, as a leg or an arm, or the whole body be again immersed, the water seems sensibly colder than it did at first.

There are many reasons for believing that on a sudden transition to a cold and dense medium, an effort takes place in the living body to produce heat, or to resist cold. The continuation of this action for some time after leaving the bath, together with the loss of heat by evaporation from the wet surface of the body, cause the second or third immersion to feel colder than the first.

To remain for a moderate space of time completely immersed in water, has by no means the same debilitating and chilling effects, as repeated immersions.

The very different consequences resulting from a long continued immersion in the sea, and from being alternately covered with water and exposed to the air, is strongly exemplified in an interesting narrative by Dr. Currie, of the effects of a shipwreck, on some mariners, who were cast away on a sandbank at the

mouth of the river Mersey. They remained twenty-four hours clinging to the wreck in the month of December. The part of the wreck to which they adhered, lying in a sloping direction, those of the crew who were placed on the higher part of it were generally out of the sea, but occasionally overwhelmed by the surge, and exposed to a piercing wind, while the others were almost constantly immersed in the water.

In the former situation were placed two masters, stout men, in the prime of life, and accustomed to hardships. These both died during the night, while the remainder of the crew, except one, were all preserved, and ultimately recovered. Those who bathe for health ought therefore to bear in mind, that it is safer to remain for a short time fully immersed in the water, than to take repeated plunges.

I have frequently observed the reaction to be more powerful, and the glow on the surface of the body more vivid, after remaining under water about a minute, than when the immersion was only instantaneous.

The repetition of immersions however, as well as their duration should be regulated by the peculiar constitution, and state of health of particular individuals, having regard also to the habit of bathing, or the contrary. The duration and frequency of immersions may be somewhat increased in proportion as the system is strengthened by the practice of bathing, and as the effects of passing from a warmer

and rarer medium to one more cold and dense, are diminished by habit.

Where circumstances permit, the practice of plunging head foremost is generally advised as the best mode of bathing. It is difficult however to discover either the principle on which this method is recommended, or any good purpose it is supposed to answer.—Certainly it is not the mode indicated by nature. A person desirous of bathing for the sake of cleanliness, or of pleasure, whose mind was free from any previous tuition, on reaching the margin of a river, or the sea, would strip, and walk leisurely into the water, till a suitable depth was attained. What should induce those who bathe for the purpose of invigorating the constitution, or for the recovery of health, to make this violent and unnatural effort, it is not easy to surmise.

To hear a person not accustomed to such an attitude, complain of headache after standing half a minute with his heels in the air, would not excite much surprise. To such an exertion the headlong leap is very analogous.

The act of temporarily holding the breath too, which this procedure implies, tends likewise to accumulate more than the due quantity of blood in the head, and thus to occasion headache.

In bathing it is unquestionably proper to sink the head and whole body under water with all convenient expedition; but to effect this a headlong plunge is by no means requi-

site; yet the more speedily this process is performed, the less will the bather be affected by a sort of convulsive respiration. The sobbing and irregular breathing produced on entering the water, are always most harassing while one half of the body is under water, and the other half is exposed to the air. If in consequence of going into the bath in an improper state of health, or of remaining too long in the water, the perception of cold and shivering, should become painful or alarming,—the person ought without delay to be put into a warm bed, and a bladder filled with hot water should be applied to the pit of the stomach. The last expedient is the most effectual method of restoring warmth to the living body, in all cases where from chance or necessity, it has been long exposed to intense cold. Independently of these circumstances, the practice of returning to bed, after bathing, is always to be reprobated.

There is considerable diversity of opinion respecting the best time for bathing, some preferring the morning, some the forenoon, and others the evening. The best time however for bathing is the hour before dinner, and next to this is undoubtedly before breakfast; when if there is any deficiency of warmth, the temperature of the body must be raised by any sufficient exercise.

It is always hurtful to bathe soon after taking food; it is indeed never advisable to bathe excepting when the stomach is empty,

or nearly so. After leaving the water the body should be briskly wiped with a coarse towel, or piece of crash, and immediately covered with clothes sufficient to excite, or preserve, the temperature of health.

After bathing it is well to take a moderate degree of exercise. But the invalid should be careful not to prolong the ride or walk, especially if exposed to the rays of a hot sun, so far as to produce sweating or lassitude; as this would counteract all the refreshment and renovated strength which would otherwise attend the practice.

The open beach is preferable to the dark and narrow limits of most bathing houses, excepting where we need a screen from the eye of spectators, or the influence of an oppressive sun.

One of the evils attending the common mode of bathing in Boston, arises from going into the water too frequently, as it is not unusual for a number of boys and some other persons with us, to bathe not only every day, but sometimes two or three times a day, and without regard to those circumstances which should always be consulted by him who thinks of bathing. To bathe every second or third day is ordinarily sufficient for all the good purposes of bathing. Daily bathing is not unfrequently found to produce a degree of languor and wasting of the body; but if no other bad effects arise, these symptoms will soon disappear after discontinuing the bath.

Salt water is somewhat more stimulant and bracing than fresh, but where the former cannot be had, all the advantages of sea bathing may be obtained in the following manner :

On the intermediate days between bathing, let the skin be perseveringly rubbed with a flesh brush, or piece of crash, and this operation will be the more grateful and strengthening if the brush or cloth be wet with a saturated solution of common salt and vinegar, or a saturated solution of proof spirit and carbonate of soda, or of potash.

Next to bathing, nothing tends so much to maintain the skin in a healthful state, and to promote a due degree of perspiration, as a regular use of the flesh brush. It is somewhat surprising and deplorable that cutaneous frictions, the good effects of which are so evident in preserving other animals in a state of health, and whose varied application formed so great a part of the hygiastic regimen of the ancients, in later periods, have fallen so completely into neglect. The occasional excitement of the skin by means of the flesh brush differs widely from the perpetual irritation of flannel.*

Besides as the use of it requires a temporary exposure of the body to the open air, which, while all danger of taking cold is pre-

* Flannel should not be worn by young people in health, in the summer season,—and those for whom it is proper by day, should not sleep in it at night. When it is removed by night, it is more pleasant and beneficial by day.

vented by the increased exertion, it accustoms the system to occasional changes of temperature, the usefulness of which has been already mentioned.

By an assiduous use of this simple instrument, which after a little time becomes very pleasant, I have known the skin, previously dry, rough, and pimpled, to become smooth and mellow, and to be attended with a sensible melioration of the general health. The use of the flesh brush should never be omitted during a course of bathing, particularly where the object is to improve health. This application may be made in the morning on rising from bed, or at any other time.

The shock of the shower bath is more formidable and unpleasant to most people than that of sea bathing; it has however several conveniences over the latter. This may be taken on rising from bed, without going from home, or costing any time worth regretting; and the quantity of water and its temperature can be easily adapted to the state of him who receives it. And as its impression is more transient than the effects of sea bathing, it may be used more frequently than the latter.

From what has been said I would deduce the following rules by which the practice of cold bathing should be regulated.

1. We are never to enter the cold bath when the temperature of the body is below the standard of health; if it is a few degrees

above this, the bathing will be proportionately more grateful and invigorating.

2. We should never remain long in the water, no longer than to secure a vigorous reaction. The common mistake on this point is, not only to remain in the water till the glow of warmth arising from the shock is established, but till it is dissipated by continuing in the water too long, or by returning to it too often.

3. We are to bathe before breakfast, or better before dinner.

4. We are to bathe when the stomach is empty, or nearly so. And

5. We are to bathe every second or third day only,—or if our bathing depends on the tide, we may bathe several days in succession, and then omit it as many.

But after all this attention to the manner of bathing, it may be demanded, what are we to gain by the practice?

I have no unwillingness to meet this question, nor do I anticipate any difficulty in answering it.

Let us remember that the great purposes of Physical Education are, to superintend the infant body, to favour its development and progress in childhood and youth, till it is completed in the man,—and then to preserve in health this complicated machine, fitted and prepared for all the duties, labours, and enjoyments of the animal, intellectual, and moral life.

After perfecting the human fabric, the great business of art is, to defend it against those causes of disease and dissolution with which man is constantly surrounded. Flight to a region of security on this earth, is impossible; our safety consists only in successful resistance. As familiarity with danger, enables the mind to surmount the influence of fear,—so the greater, more sudden, but transient impressions from the resources of art, enable the body to pass unhurt, through the less rapid but incessant fluctuations of a variable sky.

Most of the causes of disease are foreign to the body and exist without it; what is inherent would produce only the decline of age.

Many of these causes originate from the atmospheric changes to which our necessary pursuits expose us. But we are not to imagine that the active duties of life subject us to any new or peculiar dangers of this kind; our danger arises from another quarter. The man who thinks himself blest with the means of living without labour or exposure, holds his life and his health on a tenure no less precarious than he who is destined to buffet the elements, and to endure the peltings of the storm. The unnatural susceptibility of the artificial plant would wither in the outer air, which would only serve to invigorate the hardier shoot of nature's cultivation.

A change of weather which would pass unheeded over a frame wisely trained for action and for use, might enter the factitious climate

of the self-formed valetudinarian, and fix on his lungs an incurable catarrh.

What is commonly termed, catching cold, has been thought by some people in England to be peculiar to their country, from the variableness of their climate; but the fallacy of this opinion, unhappily for us, is too well known in North America. Colds are more common in autumn and spring, than in summer and winter,—and they seem in a great measure to keep pace with the variations of the thermometer. With a view to avoid these inconveniences, it becomes important to extend as far as possible, the range in which the human body can accommodate itself, without injury, to the variations of heat and cold. The lower the temperature we can accustom ourselves to bear, with impunity, the more secure will be our health.

In this respect the powers and resources of the human body are much influenced by custom.

The great John Hunter observes, that “A habit of uniformity in the application of heat and cold to an animal body, renders it more sensible to the smallest variation in either; while, by the habit of variety, it will become in a proportionate degree, less susceptible to all such sensations. This is proved every day in cold weather, by persons who are accustomed to clothe themselves warm.

In these the least exposure to cold air, though the effect produced in the skin is not

perhaps the hundredth part of a degree, immediately gives the sensation of cold, even through the thickest covering. Those on the contrary who have been in the habit of being thinly clothed, can bear the variation of some degrees without being sensible of it.

Of this the hands and feet afford an instance in point; these excite the sensation of cold when applied to other parts of the body, without having previously given to the mind any impression of cold existing in them."

To prove that an occasional exposure to cold, and even severe cold, is not injurious to health, after we have been prepared for such an exposure, or properly introduced to it,—it has often been observed that during a voyage to Greenland, disease is hardly known among a ship's crew. Even wounds and sores are said to heal almost spontaneously.

The very different consequences that occur during a transition from a cold to a warm climate, are too generally known to require any detail.

In vain do the delicate accumulate defences against the vicissitudes of external temperature.

Those who never tread but on carpets, sleep on feathers, and take every precaution to prevent the breath of heaven from blowing rudely on them, are incomparably more liable to be disordered by the impression of cold than the laborious peasant or the careless seaman who is daily exposed to the rage of storms and tempests.

The occasional use of the cold bath, by insuring the body to a wider range of temperature, greatly diminishes the danger of those sudden transitions from heat to cold, and the contrary, which in the common tenour of life it is impossible wholly to avoid. After having bathed in the sea, for a few weeks in autumn, I have observed says Dr. A. P. Buchan, with respect to myself, as well as in many other instances, that persons prone to catarrhal affections (to taking cold) are much less susceptible of them during the ensuing winter; one general effect of the cold bath being unquestionably to induce a degree of what in common language is denominated, hardiness,—and which may be defined, that state of the living system which is least liable to be affected by disagreeable impressions.

There is an intimate connexion and sympathy between the skin, or surface of the human body, and the various organs and structures within; hence the power of various causes of numerous, violent and dangerous diseases, as applied to the skin, through which they make their ravages and inroads to the seat and centre of life.

Hence too the importance of the skin as the very extensive organ to which some of the most energetic remedies are successfully made.

The skin too is the great organ of perspiration, a process which we all know has a near relation to the preservation of health.

To keep the cutaneous surface sound therefore, is, in a good measure, to protect the whole interior. The lungs have been supposed to be a principal source of animal heat, and the external surface of the body appears to be the organ by which the temperature of the system is regulated.

We know that by exercise the circulation is accelerated, a greater quantity of blood passes through the lungs in a given time,—that respiration is quickened, and more heat is evolved. But exercise at the same time augments the discharge from the skin; which being converted into vapour as fast as it is produced, tends to carry off and render insensible, a considerable portion of the increased heat.

To modify the temperature of the human body in warm climates, the secretion of perspirable matter is prodigiously augmented, and copious supplies of diluting fluids are required to supply the rapid waste. By these means the heat of the body while in health, is prevented, in all situations, from exceeding 98 degrees. Any excess above this standard indicates disease: for example, in fever, the heat of the body as determined by the thermometer, is sometimes found to exceed this degree, but the skin at the same time is dry and parched; so soon as a free perspiration is procured by art, or occurs spontaneously, which is frequently the natural crisis of the disease, the increased heat subsides.

It is necessary to understand that the perspirable fluid does not exsude through the pores of the skin in proportion as they are relaxed by heat, as water might be supposed to transude the pores of leather. Perspiration is to be regarded as an active function, like the other secretions of the body, carried on by appropriate vessels, communicating with the pores of the skin, and regulated by the principle of life.—A healthy state of the skin, as of every other part of the living body, consists in the power of performing its own operations with regularity, independently of the influence of any extraordinary stimulant.

If the body be constantly surrounded by a medium of high temperature, either from living in a warm climate, or by wearing clothes that retain the heat, perspiration will be checked by the smallest diminution of this temperature.

By accustoming the cutaneous vessels to sudden transitions from heat to cold, their susceptibility to the effects of slighter alterations is diminished, and perspiration becomes firm and regular. As a proof that the organs of perspiration are rendered more vigorous by occasional exposure to cold, I have known several examples of persons who never failed to catch cold, on having their feet in the slightest degree wet, who, in consequence of adopting the habit of washing them every morning in cold water, or a solution of salt and water, have entirely overcome this ten-

derness of constitution. The same practice will remove a dryness of the feet which is generally a sign of feeble health.

A free and regular perspiration is usually accompanied with good health, and a good digestion. This is well exemplified in the country labourer; who by working all day, thinly clad, in the open air, acquires a keen appetite that makes him relish and digest the most solid and substantial fare. The lower the temperature at which the organ of perspiration is accustomed to perform its office, the less is the risk of its action being interrupted by the inconstancy of our climate; and in the same proportion is the danger of diseases originating from suppressed perspiration diminished.

But the most surprising and almost incredible examples of the transitions from great heat to extreme cold, which the human frame can sustain without injury, when aided by habit, are furnished by the practice of the more northern nations of Europe.

The Russian vapour baths are heated to 120 degrees, and from these the natives plunge into the neighbouring river, through holes cut in the ice, or roll themselves in the snow.

The colder the climate, the more do the inhabitants appear to delight in these transitions from one extreme of temperature to another.

The following account of the mode of bathing in Finland, is to be found in Acerbi's Trav-

els. "Almost all the Finnish peasants have a small house built on purpose for a bath, it consists of but one small chamber only. in the inner part of which are placed a number of stones, which are heated by fire till they become red. On these stones water is thrown till the company within are involved in a thick cloud of vapour.

I once or twice tried to go in and join the bathers, but the heat was so excessive that I could not breathe, and in the space of a minute at most, I verily believe, must have been suffocated.

I sometimes stepped in for a moment, just to leave my thermometer in some proper place, and immediately retired; in ten or fifteen minutes I took out the instrument to ascertain the degree of heat. My astonishment was so great that I could scarcely believe my senses, when I found that these people remain together and amuse themselves for the space of half an hour, or sometimes a whole hour in the same apartment heated to 167 degrees of Fahrenheit, or within eight degrees of boiling spirit. These people pass instantaneously from this great heat, into snow or water below the freezing point, and without the least inconvenience, while many persons, not thus prepared, are very sensibly affected by a variation of 4 or 5 degrees, and in danger of being afflicted with rheumatism by the most trifling wind that blows."

The truth of other relations, similar to this, is abundantly confirmed.

This mode of bathing is not to be imitated, it is adduced merely to prove what has been already asserted, that our power of sustaining, without injury, great and sudden reductions of temperature, will be in proportion to our excess of heat at the time of the exposure, to our strength at the time, and the influence of preceding habits.

Another misconception, connected with the influence of temperature on health, is constantly operating and producing deplorable effects. To persons about to leave a warm apartment, particularly females, the direction is to cool themselves before they inhale the outer air, in order to avoid the ill consequences of a too sudden change of temperature. This direction is the reverse of what ought to be inculcated, and is well suited to produce the evil it is intended to prevent. In what manner are persons made sick by returning from the ball-room, or a warm parlour, in a winter evening?

Undoubtedly by being exposed to a degree of cold of sufficient intensity and duration to induce disease. This is to be avoided by carefully maintaining a good share of heat till we set out, and by supporting it while in the air, by warm clothing and exercise.

No one in health was ever injured by passing through the cold night air, so far as temperature merely is concerned, who came into

it while warm, and with the means of preserving this warmth to his own house.

A neglect of this precaution has cost us several valuable lives in Boston.

The same principles which should govern our conduct in the external use of cold air and cold water, should direct us also in the practice of taking cold water and other cold substances into the stomach. The same circumstances which render the former safe and refreshing, render the latter so likewise.

I have said nothing of bathing as essential to cleanliness ; those who cherish the sentiments and feelings which lead to the practice of personal neatness, will need no recommendation of mine to induce them duly to estimate the value of daily ablution.

The connexion between physical and moral purity, and their tendency to promote each other, has often been noticed, and is undoubtedly true,—and we should not have reason entirely to respect any character that could be indifferent to either.

Thomson has said,

“E’en from the body’s purity, the mind
Receives a secret, sympathetic aid.”

What malefactor in the contemplation of his crime ever washed his body with water and clothed it with pure vestments ?

On the contrary, how often has the man who meditates a deed that cannot bear the light, disfigured and disguised his form, to

prevent the assurance of personal identity,—and if possible, to efface from the human being the image of his Maker.

What I have said of bathing relates to the well, or at most to the invalid who is able to go forth to the bath. Where there is a patient there should be a physician, and where there is either, it is not my habit, unless requested, to interfere; indeed, my only effort has been, to enable you to be well without the physician.

A
DISCOURSE
ON
WARM BATHING.

AS a general practice for persons in health, warm bathing cannot with propriety be treated as a means of curing diseases.

It is chiefly therefore as a method of improving and securing health that I am now to consider it, regarding it no further as a remedy than may be necessary to elucidate its general character and effects on the human system. It would be quite impossible however to give an adequate idea of the power of the warm bath without adverting sufficiently to its decisive influence in the successful treatment of many diseases.

An attempt to enter on a complete detail however of the advantages of warm bathing in sickness and in health, would far exceed the just limits of a single discourse.

But as a favourable opinion of the practice is very properly gaining ground, and accommodations for this purpose are increasing in several parts of our country; some general

account of the effects of the warm bath on the living body, together with a few requisite cautions respecting its due temperature, and other circumstances relative to the most proper manner of using it, will not, I trust, be deemed unworthy of your attention.

Among the nations of antiquity the use of the warm bath was very general; and with various changes in its application, it has descended to the present time. As a source of pleasure, or an object of luxury, it was employed with great regularity; few omitted going into the bath once, and persons of distinction were accustomed to bathe four, five, or six times a day.

Their most luxurious moments were passed in this way; it was valued by all classes of society as one of the principal comforts of existence; and among the Greeks, according to the discipline of their religion, a prohibition of the bath, was considered as a severe punishment for immoral offences.

The baths of Rome were spacious, magnificent, and numerous. It cannot but excite our wonder and admiration when we learn, that at one time there were upward of eight hundred and fifty public baths required to satisfy the wants of this great city. The magnitude and extent of those most admired, may in part be conceived from the ruins of the baths of Dioclesian, Titus, and Paulus Emilius.

Even some of those which were used by the plebeians, were supplied through silver pumps.

This was loudly complained of by Seneca, who, at the same time, as an instance of the luxury of the people, said, that the freed-men trod on gems. Some of these baths were capable of containing the incredible number of between fifteen hundred and two thousand persons.

In these days, and before, among the Grecians, it was frequently abused; on this account, as well as from the irregular manner in which bathing is now practised by the oriental nations, we are not to look for any satisfactory information either from them or the ancients, with respect to bathing as a remedy for the many diseases in which it is applied in modern practice, or as a method of preserving and improving health.

The warm bath indeed could not have been safely recommended, or advantageously used, as a preventive or cure, before the invention of the thermometer, by which, when practicable, and not by the feelings of the patient or bather, ought its temperature to be regulated. Where a thermometer cannot be had, the rule should be this; bring the water to that temperature which feels neither hot nor cold to the arm, or some part of the body usually covered, and after entering the bath at this degree of warmth, its heat may be raised to the temperature just mentioned

On commencing a course of warm bathing, the first thing to be attended to, is the heat of the water. Any bath may be denominated warm, whose heat is sufficient to produce and

continue the sensation of warmth,¹ while we are in it.

But there is no one degree of heat that will always produce this effect, because the animal heat of different persons is not always the same, nor is the temperature of the same person at all times alike, but varies with the different states and conditions in which he may be placed.

This fact is very important, though rarely noticed; it is important because without attending to it we cannot so modify the temperature of the bath, as to suit it to particular cases.

Whether the warm bath is, in any given instance, to be grateful, or otherwise, hurtful or beneficial, must depend chiefly on its temperature and duration being properly adjusted to the state of him who bathes. The best temperature for persons in health, is that degree of heat which will produce the most pleasurable sensations.

This degree of heat corresponds most commonly to the 93d degree of Fahrenheit's thermometer.

We are then to bring the water to this temperature before we enter the bath, and after being in the water two or three minutes, and attending to our sensations, we are to add hot or cold water so as to bring the bath to that degree of warmth which is most grateful to our feelings.

It is better to enter the warm bath when it is too cool rather than too warm. If we enter

it too warm we lose the power of judging accurately by our sensations of that degree of heat which would be most pleasant at the time, and ultimately most beneficial ; whereas if we enter the bath below the proper temperature, it is easy to correct the only inconvenience that follows from this mistake.

The two following cases are adduced to show the influence of temperature, on the effects of the warm bath.

A gentleman, aged forty, had suffered for some months from a spasmodic contraction of the muscles of his right shoulder, attended with painful irritation, and at night considerable febrile action. He used baths of various temperatures in an irregular manner, both at Brighton and elsewhere, in England, without advantage. At length he tried the Buxton tepid bath of 82 degrees, which, after a few trials, removed the complaint.

A few years ago, a person of extensive commercial connexions, aged sixty-eight, became extremely irritable and unhappy in consequence of pecuniary losses. He passed sleepless nights, and his appetite forsook him. On coming to Brighton, he imprudently entered into a warm bath of 100 degrees, while his bowels were costive, his pulse high and quick, and his heat at night very considerable.

The consequence was, he became feverish, his head was affected with a fixed pain, and all his uncomfortable feelings were considerably increased. He was about to abandon the

warm bath in despair; but on using purgative medicines, taking his bath at 92 degrees, in the forenoon, and by avoiding wine and cordial medicines, of which he had used large quantities, his general health was soon reinstated. His error consisted in the abuse of a useful, and to him salutary remedy, having applied it at an improper time, and of a temperature unsuited to the nature and state of his disease.

These and other similar cases are published by Dr. Gibney, who was for many years resident physician at Brighton, and who paid much attention to the character and effects of warm and cold bathing, as appears from his excellent work on the subject.

Other cases are recorded where the mistake and the injury have arisen from taking the bath at too low a temperature.

The necessity of exercise before and after the warm bath, is every day evinced, where bathing is practised,—and must be held as one of those general rules from which there are very few exceptions.

Every irregular nervous action to which the human constitution is liable, is known to be influenced by the medium in which we breathe.

The valetudinarian, whose health is tolerable under the mild atmosphere of Italy, or the south of France, passes a miserable season in regions less temperate and more variable.

Hence we can reason on the effects resulting from the repeated and well regulated

use of the warm bath on diseased nervous sensation.

A bath of the *same* degree of heat as the animal temperature of the person using it, will, for a few minutes after immersion, *increase* that heat very considerably; even if it be 5 degrees lower than the usual standard, which is 98 degrees, it will raise the animal heat to 100 degrees.

This proceeds from a cessation of the cooling process of evaporation from the skin, and the augmentation of heat occasioned by the medium in which the body is immersed, added to what is at the same time generated internally.

This fact instructs us as to the proper mode of applying the warm bath in a variety of cases, where success depends altogether on the well regulated temperature of the bath, more particularly in nervous affections, in which the most minute attention should be paid to all the symptoms, and to the whole process of cure.

Tiberius is said to have lost his life by an improper use of the bath.

Having spoken of the proper temperature of the warm bath, we may next consider, the best time for taking it.

In general, the practice, as mentioned by Plutarch, and others, of the Greeks, of using the bath previous to their principal meal, which corresponded in time nearly with our present

dining hour, may be considered as preferable to any other.

Our healthy digestion has a very natural connexion with the salutary functions of the skin, and no stimulus can be so natural to it as a well regulated bath, at this particular time of the day,—while that restlessness, which it often occasions when used later in the day, will be avoided.

It may sometimes be allowable to take a warm bath before breakfast,—and sometimes in the evening, particularly after travelling in hot weather and dusty roads; but on most occasions the forenoon, after the morning meal is digested, is the best part of the day for bathing, whether cold or warm.

The apprehension of being chilled, and of suffering from cold by exposure to the open air, after the warm bath, is not well founded; in numberless instances the usual occupations of life are pursued through the remainder of the day, not only without injury, but with renewed animation and success.

It is true that in rising from the warm bath a cool air feels more chilly than the same atmosphere would do in ascending from the cold bath; and there is a rapid evaporation of heat from the skin while the body remains uncovered.

This requires, especially where the health is delicate, that the air of the apartment, where we bathe in cold weather, should be made pleasantly warm. With this precaution,

and suitable clothing, there is no more danger of going into the cold air from a warm bath, than from a warm bed in a winter's morning. The body is refreshed and invigorated by heat in both cases, and thereby rendered the better able to resist cold.

Whenever I have passed a night without sleep, and been incommoded at the same time by cold, I have always, in consequence of this exposure and privation, been the more feeble and chilly the next day; and with this observation I think the general experience of every soldier and physician will accord.

I have taken the warm bath in the warmest and coldest divisions of our year,—more with a view to observe its effects on my own health and sensations, than because I have needed its restorative influence at the time; and I can truly say, after bathing in both extremes of weather, that I have been equally and uniformly less sensible of the inconvenience from heat or cold.

I have always felt more light, cheerful and active,—and more inclined, and better fitted for a full and successful employment of the powers of mind and body.

If these exhilarating and invigorating effects are common to the warm bath, when rightly conducted, of which there is abundant proof, how shall we dispose of the prevailing idea that it is relaxing and debilitating? A solution of the difficulty will be found in an inquiry into the origin of a persuasion which has deprived so many persons of the advantages of

the warm bath, who have needed its good effects.

When the bath has produced unpleasant or hurtful effects, these have almost invariably arisen from its improper application, and from the want of a just discrimination, these effects have been ascribed to the practice of bathing, instead of being referred only to a wrong mode of conducting it.

Thus a misapplication of the bath has been urged against its use ; as if the abuse of a good thing could convert it into a bad one.

In Rome the crowds allured by the attractions of the bath, to pass their time in frivolous amusements, or idle conversation, might afford the moralist ground for asserting, that the warm baths relaxed, not indeed the persons, but the minds and manners of the people.

But as the pleasure derived from every impression made on the human body diminishes with the frequency of the repetition, those who employed the warm baths merely as an instrument of luxurious enjoyment, required their heat to be perpetually augmented. During the times of the republic, it formed a part of the duty of the officers called Ediles to enter the baths in order to regulate their heat before the public in general were admitted.

With the universal corruption of manners that accompanied the struggles of the various competitors for supreme power, this salutary custom fell into disuse; and as Pliny informs

us, the people were at length accustomed to enter the baths at almost a boiling heat.

That debility and disease should be the consequence of frequently exposing the body to this violent stimulus, cannot excite much surprise.

Dr. Gibney has well said, that “on the human frame, the influence of heat, when conveyed through so high a conducting power as that of water, is very considerable. If properly applied, it gives a tranquil and pleasurable sensation, soothes agitated feelings, and moderates the circulation,—renders the skin soft, smooth, and pliable; gives tone to the secreting organs, and energy to the intellect,—affording a consoling consciousness not to be attained by any other artificial means.”

Dr. Darwin says “the word *relaxation* and *bracing*, which are generally thought to be expressive of the effects of warm and cold bathing, are mechanical terms, properly applied to drums and strings; but are only metaphors when applied to the effects of bathing on animal bodies. The approach of old age is chiefly indicated by a general diminution of the irritability of the system. The various secretions are carried on with less vigour; this is particularly apparent in the suppression of perspiration, which gives rise to that sordid appearance and harsh feeling of the skin, so common in advanced life. A warm bath not only removes those decaying parts of the cuticle, which obstruct perspiration, but by suspending

for a time the exertion necessary to support the heat of the body, hinders the strength, and retards the advancement of age.

The story of *Æson's* becoming young from the medicated baths of *Medea*, seems to have been intended to teach the efficacy of warm bathing in retarding the approach of old age. This it does by increasing our irritability, and by moistening and softening the skin, and the extremities of the finer vessels which terminate in it. The warm bath by its action on the skin excites the various glands and vessels that open on its surface to greater activity, and consequently many other motions associated with them.

To this increased action is added pleasurable sensation, which further increases the actions of the system; and thus many kinds of pain receive relief from this additional atmospheric heat. The stimulus of wine, of spice, or salt, increases the heat of the system, by increasing some or all of the secretions; and hence the strength is afterward diminished by the loss of fluids, and the increased action of the fibres.

But the stimulus of the warm bath supplies heat rather than produces it; and rather fills the system by increased absorption, than empties it by increased secretion; and may hence be employed with advantage in almost all cases of debility, with cold extremities. The activity of the system thus produced, does not seem to render persons liable to take cold on leaving

the bath, for the body is less likely to become torpid than before, as the warmth thus acquired by communication, rather than by increased action, continues long without subsequent chillness." These opinions correspond with the observation of Dr. Fordyce, who says, in his Treatise on Fever, that those who are confined in an atmosphere of 120 or 130 degrees of heat, do not feel cold, or look pale, on coming into a temperature of 30 or 40 degrees, which would produce great paleness and sensation of coldness in those who had been sometime confined in an atmosphere of only 86 or 90 degrees of heat.

That the tendency of warm bathing is not to weaken or relax, is sufficiently proved by its exhilarating influence on those in health, as well as by its giving strength in many diseases of debility.

The utility of bathing depends also in a considerable degree on the length of time during which we remain in the bath. On this point a variety of opinions prevails, and there is some difficulty in laying down a general rule.

As the heat of the bath increases that of the person taking it, generally from 5 to 8 degrees beyond its own temperature, if this temperature should be perfectly suited to the circumstances of the case, the pulse becomes regular, and commonly much less frequent.

These circumstances are of considerable importance in determining the proper time of continuing in the bath; for we may be assur-

ed, if it should alter the tone of the circulation from a morbid to a natural state, that its ultimate effect will be of a most salutary kind; and even the refreshing feeling it gives while we are under its direct influence, may be regarded as a warrant of the advantage to be expected.

Almost every suspension of a diseased action is a step toward amendment, and where this follows immersion in a bath of a proper degree of heat, we may conclude that the benefit would be greatly increased by remaining in it much longer than is usual in this country.

Heat in a certain degree, is so necessary to animal existence, that when suspended for a time, it recurs with an increase of power. On this recurrence, as a secondary effect of cold, its salutary application depends: but as the *direct* power of the one is so very different from that of the other, it is necessary to be particular in the distinction, and to recollect, that a certain degree of heat is requisite to muscular motion. This is observable in those animals that pass their winter in a torpid state, and are revived by the summer's heat.

The two sources of heat are the medium in which we live, and organic action; the first, of course, differing according to the temperature of the climate, and the other according to the circumstances and organization of the animal.

We may thus account for the general health of the inhabitants of temperate climates being better, and longevity more common among them, than in regions where the extremes of heat and cold prevail; and for the salutary agency of cold bathing, by its producing animal heat in an indirect manner, while the same effect is directly produced by the warm bath.

In England, Dr. Gibney informs us that the general time for remaining in the warm bath, is from twenty to thirty minutes. He thinks this practice arises from a strong prejudice respecting its relaxing powers,—and adds, if we remain in a bed of the temperature of the warm bath, fatigue is removed, unless the time thus spent is either too long or too short, or the heat insufficient. Hence he says we may perceive the fallacy of the opinion, that remaining in a medium for hours, of a temperature equal, or somewhat above, our natural warmth, tends to relaxation; except indeed in extreme cases. The daily exhaustion we experience, must be restored by sleep, and this sleep, to be sound and recruiting, must be cherished by quiet and *warmth*. In the early stages of human existence, and in those periods of advanced age where debility is great, warmth is quite indispensable.

The following case, with some abridgement, is from Count Rumford.

“Being at Harrowgate on account of my health,” says the Count, “I at first went into

a bath warmed to about 96 degrees of Fahrenheit, every third day. At first I went into the bath about 10 o'clock in the evening, and remained in it from ten to fifteen minutes, and immediately on coming out of it went to bed, my bed having been well warmed, with a view to prevent my *taking cold*. Having pursued this method for some time, and finding myself frequently feverish and restless after bathing, I accidentally, in conversation, mentioned the circumstance to an intelligent gentleman, who lodged in the same house, and who had long been in the habit of visiting Harrowgate every year.

He advised me to change my hour of bathing, and to stay longer in the bath, and above all to avoid the warmed bed on coming out of it.

I followed his advice and shall have reason, all my life, to thank him for it.

I now went into the bath regularly every third day, about two hours before dinner; and on coming out of it, instead of going into a warmed bed, had myself wiped perfectly dry with warmed cloths; and dressing myself moderately warm, retired to my room, amusing myself with walking about the room, reading, or writing, till it was time to dress for dinner. The good effects from this change of method were too striking not to be remarked and remembered. I was no longer troubled with any of those feverish heats after bathing which I experienced before; and so far from feeling *chilly*, or being particularly sensible to cold on coming out of the bath, I

always found myself less sensible to cold after bathing than before. I even observed repeatedly and invariably, that the glow of health, and pleasing flow of spirits, which resulted from the full and free circulation of the blood which bathing had brought on, continued for many hours; and never was followed by any thing like that distressing languor which always succeeds to an artificial increase of circulation, and momentary flow of spirits, which are produced by stimulating medicines. I regularly found that I had a better appetite for dinner when I bathed than when I did not; better digestion also, and better spirits, and was stronger, and less sensible to cold in the afternoon and evening.

As these favourable results appeared to be quite regular and constant, I was induced to proceed to a more decisive experiment. I now began to bathe every second day; and finding all the advantageous effects which I had before experienced from warm bathing, still continued, I was encouraged to go one step further, and to bathe *every day*. This experiment was thought to be very hazardous by many persons at Harrowgate, and even by the physician, who did not much approve of my proceedings; but as no inconvenience of any kind seemed to result from it, and as I found myself growing stronger every day, and gaining fresh health, activity and spirits, I continued the practice, and actually bathed every day, at two o'clock in the afternoon, for

half an hour, in a bath of 96 degrees, for *thirty-five days*.

The salutary effects of this experiment were perfectly evident to all who were present and witnessed its progress; and the advantages I received from it have been permanent. The good state of health I have since enjoyed I attribute entirely to it."

This report is characteristic of Count R.'s habitual spirit of investigation, and of his excellent habit of recording facts, and communicating useful results.

Nothing can be more decisive, so far as one trial can go, than this history in favour of warm bathing. Nothing can more clearly point the character and tendency of the practice, or be more instructive in relation to the proper time and mode of conducting it.

The plan of bathing once or twice a week, for the short space of fifteen or twenty minutes, should be considered as generally nugatory and delusive, and sometimes worse than useless.

In Switzerland, according to Dr. Gibney, the time of remaining in the warm bath is from six to twelve hours; at Pfeffers, one half of the body is exposed for many hours in succession to warm vapour, while the other half is immersed in the bath. At Landeck, in Silesia, the practice of continuing in the warm baths, in all cases of debility, for hours at a time, is also very general, and is attended with the happiest effects.

Heat duly modified, gives renovated vigour to vegetable and animal existence, and only produces relaxation when immoderately applied.

This is most strongly exemplified in those warm climates where it is not excessive; there, the inhabitants are accustomed to remain long in the warm bath, which, as they express it, "feeds and nourishes their blood." Were it relaxing, the relief it is known to afford in cases of the utmost weakness, attended with cold, clammy, and wasting sweats, could not follow. In the Levant and in Italy, no disease of relaxation is thought to be effectually removed without the warm bath; and in every species of intermittent fever, where affections of the liver so often accompany the disease, its successful application is remarkable.

Dr. Gibney, to whom I have so often referred, says, "in most cases where warm baths are necessary, not only remaining in the bath for as long a time as the person can well bear it, but a continuance of its use for some weeks, will be found requisite; and when steadily pursued this course is capable of affording relief where other means would not avail, or where the remedy itself used differently, would lead to fruitless results and disappointment. Indeed," he adds, "on this point I cannot insist with too much earnestness, as on it the character and success of this most salutary practice depends; and hitherto,

from its not having been more particularly attended to, has arisen a want of confidence in a mode of cure, of more general importance to the comfort and relief of mankind, than it is possible to conceive."

That a single application of the warm bath will sometimes produce effects decidedly curative, is proved by the following report which contains the history of my own case.

Some years ago I took cold which produced a fulness and heat in the head, with a mucous discharge from the nose. The disease, which was an inflammation of the mucous membrane, called catarrh, extended to the throat, wind-pipe, and lungs, attended, as is common, with hoarseness, soreness, and some cough; these symptoms increasing five or six days, were followed by chills several times a day, succeeded by flushes of heat. The usual appetite had now failed, pains seized the back and limbs,—there was great lassitude, and it was with considerable difficulty that I could walk.

Every thing announced the near approach of a settled inflammatory fever. It was quite time to attend to these complaints, and I concluded to begin with the warm bath. At 1 o'clock I walked to the bathing house with as much sickness upon me as I could well bear. I entered the bath at 93 degrees, raised the temperature one or two degrees soon after, and remained in the water three quarters of an hour. In a short time after being in the bath all my unpleasant feelings

subsided ; this induced me to remain longer in the bath than I had ever done before. Excepting some slight remaining affection of the head, from the time I left the bath, I was well ; every ache, and pain, and oppression had left me while in the warm water. In three days more the head was entirely recovered without using any other remedy. This relief was to me the more striking and memorable because it was addressed to my own sensations.

With the trifling remnant mentioned, the relief was perfect, and almost instantaneous, and certainly more pleasant than any other could have been, even if another remedy could have been found equally sudden and effectual.

The frequency of bathing in warm water should vary a good deal with circumstances. If the intention be to retard the advances of age, to promote cleanliness, and improve health ; once, twice or three times a week will answer these purposes.

If it be used as a remedy it may be resorted to every day, as in the case of Count Rumford. Or rather, on this application of the bath, it will be safer, as a general rule, to consult a physician, though it is probable that Count R. did better in consequence of disregarding the apprehensions of his, than he otherwise would have done.

Perhaps at some future day, when the theory and practice of bathing shall be generally known in this country, we may find sufficient inducements to adopt the Turkish cus-

tom of having a public bath in every town and village.

Among the Turks bathing is constantly practised, as well in conformity with the religious precept of Mahomet, as to preserve and promote cleanliness, in a country where perspiration is so easily excited. Mr. Savâry, the French traveller, informs us, that "the bathers at Cairo in Egypt, are not imprisoned as in Europe, in a sort of tub, where one is never at his ease. Extended on a cloth spread out, the head supported by a small cushion, they stretch themselves freely in every posture, while they are wrapt up in a cloud of odoriferous vapours, which penetrate into all the pores."

The following rules comprise a practical summary of what has been said.

1. The warm bath should be entered by persons in health at 93 degrees of heat, and after waiting a few minutes and attending to our sensations, its temperature should be so altered, if any alteration is required, as to render it the most grateful to our feelings.

When a thermometer cannot be had, the water should be brought to that temperature which feels neither hot nor cold to the arm, or some part of the body usually covered, and after entering the bath at this degree of warmth, it may then be raised to that temperature which is most pleasant.

If the temperature of the bath is what it should be, it will supply any deficiency, or counteract any excess of heat, in him who bathes.

2. The best time for bathing is the forenoon, after the breakfast is digested. The cases in which it is allowable or expedient to bathe in the morning or evening, are few, and to be regarded as exceptions to the general rule.

3. It is not easy to point out as a general direction, any precise period, as the best time for remaining in the bath.

That period, of course, is best which produces the best effects, but this cannot always be determined before one or more trials are made. It is well in this particular to be governed in a great measure, by our feelings while in the bath,—for if these are soothing and refreshing, there is much reason to believe that the subsequent effects will be beneficial.

In this case it will often be useful to remain in the bath for half an hour, or even an hour. Those who are in the habit of bathing generally find it pleasant to remain longer in the bath than would be agreeable or expedient for beginners.

4. The frequency of bathing should also depend much on circumstances. When the bath is taken to prevent disease and improve health, and is well borne, it may be used every second or third day.

When it is used to cure disease, the whole subject must be referred to the judgment of the medical attendant.

5. Bathing should be preceded and followed by exercise.

When the general principles of a science are understood, its particular application will soon be learnt, by attending to the varying circumstances of particular cases.

If a New England traveller were asked, what is the custom of your countrymen in regard to bathing? he might be at a loss for a definite reply, and it might also happen that he would be unwilling to acknowledge his own want of acquaintance with its theory or practice.

The following anecdotes would assist him in forming an opinion on the subject.

During the last year, a gentleman from that class in society whom we are early taught to regard as the most venerable and useful, being out of health, and somewhat disturbed or deranged in his mind, came with his wife, fifty or sixty miles from the country, to consult a physician in Boston. Among the enquiries which the physician thought proper to make, before he should prescribe for his patient, he asked him if he had ever tried bathing of any kind; the answer was, no. What never washed your skin? No sir. This produced some remarks about cleanliness which embarrassed the good man and his wife. The doctor insisted on seeing the skin of his patient's arm,

whose complexion was found to differ materially from that of his face.

The physician then directed him to go to the warm bath and wash himself, declining any further advice till this was done.

The poor clergyman became now still further alarmed by the idea of expense, enquiring anxiously, what is the price of a warm bath? As much again as you will think it worth, was the answer. The husband next conferred with his wife on their ability to meet this expenditure; they concluded they were unable, and almost overwhelmed by the sudden and accumulating perplexities which involved them, without seeking or receiving any further direction, they abruptly took leave, and hastened to their own house, as the only resource and retreat that seemed to be left them.

An enterprising citizen of this town, of firm nerves and active mind, eight years since, went in the evening, to take a sea bath. He sat sometime in the bathing house, nearly undressed, till he became cool. On plunging into the water he felt a sudden chill which filled him with shuddering and horror. He instantly left the water, but passed a wretched night, depressed in mind and deranged in all his bodily sensations. The next day he consulted a physician who recommended a warm bath. This it appears was taken too warm, and it did not afford the expected relief. The gentleman assures me that he could not surmount the very unpleasant effects of the cold bath, as they af-

fecting his mind and body for nearly two years. And even to this day he cannot endure the idea of repeating it. Other similar histories, almost without number, might be collected, but they are not needed.

These two individuals represent two numerous classes,—those who never bathe, and those who, having bathed amiss and been injured, have abandoned the practice; they are sufficient to prove what it is enough for my present purpose to assert, that the principles which should regulate bathing, cold and warm, are generally very little understood; and that the practice of it is, for the most part, neglected, or misapplied.

An English writer, speaking of the neglect of bathing, says, there is many an honest matron in England who has not washed her skin since the coronation. What better can we say of many excellent women in this country, cleanliness excepted, who have not seen a bath, cold or warm, since the revolution?

How many whited sepulchres there are in every country! Men and women richly and gaily attired without, but not what they should be within.

It is not therefore merely as a means of health that bathing should be practised; it is an indispensable constituent of personal neatness, and this is well entitled to be added to the list of cardinal virtues, not only as being equally conducive with any of these to our

physical well-being, but also as it implies a degree of delicacy and purity of mind.

It is also essential to that influence which every wise man wishes to possess for his own preservation,—and every good one that he may likewise be useful to others.

This power we know is sometimes abused, but we know too that it may be cultivated from the purest motives and for the noblest ends. Those persons who are willing to rest in appearances, and can prefer the miserable substitutes of art to an improvement of the rich endowments of nature, will be the last to believe what a medical philosopher of our country has lately asserted, that “cleanliness is as conducive to decency, comfort, elegance, morality, intellectual activity, and the dignity of human nature, as it is eminently so to safety, health, and long life.”*

Ablution in the Mosaic law, constituted one of its most important ceremonies, and in the Christian, was originally inculcated as an essential introductory rite,—and it has always been enjoined as necessary to the preservation of health.

To the mansions of the wealthy, a bath ought to be considered as an indispensable appendage; and if institutions for the corporeal purification of the lower class of society were generally established, they could not fail to produce an incalculable diminution of disease,—and thus, to a certain degree, to lessen the

* Edward Miller.

necessary number of hospitals and other expensive asylums for popular refuge and relief. If we mean then to deserve the reputation, or to possess the consciousness of physical purity, let us begin with the surface of the body, instead of attempting to supply the place of this invisible and inestimable gem, by the more showy decorations of exterior ornament.

With the former, the latter are nearly superfluous ; without it, they would be deplorably inconsistent.

I shall close with an extract from Mr. Savary's account of the hot baths of Egypt ; he says, " Coming from a bath filled with hot vapour, in which excessive perspiration bedewed every limb, into a spacious apartment, and the open air, the lungs expand and respire pleasure : well kneaded and as it were regenerated, the blood circulates freely, the body feels a voluptuous ease, a flexibility till then unknown, a lightness as if relieved from some enormous weight, and the man almost fancies himself newly born, and beginning first to live. A glowing consciousness of existence diffuses itself to the very extremities ; and while thus yielding to the most delightful sensations, ideas of the most pleasing kind pervade and fill the soul ; the imagination wanders through worlds which itself embellishes, every where drawing pictures of happiness and delight. If life be only a succession of ideas,—the vigour, the rapidity, with which the memory then retraces all the knowledge of the man, would lead us

to believe that the two hours of delicious calm which succeed bathing, are an age. Such are these baths, the use of which was so strongly recommended by the ancients, and the pleasures of which the Egyptians still enjoy.

Here they prevent or exterminate rheumatisms, catarrhs, and those diseases of the skin which the want of perspiration occasions.

Here they rid themselves of those uncomfortable sensations so common among other nations, who have not the same regard to cleanliness."

Perhaps the temperate state of our nerves, uninfluenced by the climate or the baths of Egypt, may lead some of us to view this account of Mons. Savary as somewhat extravagant and fictitious, and yet it may be that this description is merely a faithful transcript of the ideas and sensations which the bath had produced. Be this as it may, I hope enough has been said, and much must be left unsaid in a single essay, to induce the belief that bathing is essential to personal neatness,—that the warm bath, rightly taken, is a highly grateful and innocent indulgence, an efficient means in the preservation and improvement of health; useful in preventing sickness, and an effectual remedy in many diseases.

If the effect of bathing in the proper manner, be as we have said, to improve and preserve health, it cannot be difficult to perceive its true character, or to point out its uses.

But we are not to cherish the body for the injurious and unhallowed purposes of sense, but for the innocent pleasures and delightful employments of a sound body under the direction of a sound mind ; and for the still nobler end of consecrating its active powers to the service of the Creator, who has impressed on its complicated and wonderful structure, so many marks of wisdom and design ;—and who renews in its daily preservation, so many proofs of kindness and care.

REMARKS

ON THE EFFECTS OF DRINKING COLD WATER IN WARM WEATHER.

IT is incumbent on those who would instruct and direct the public on this subject, either to furnish such directions as shall enable us to drink cold water with safety when we are preternaturally heated, or distinctly to admonish us that this inclination can *never* be indulged with impunity.

That the proper rules have not yet been given, or if given have not been obeyed, is evident from the many deaths which every year continue to occur from the drinking of cold water in undue quantity, or under improper circumstances.

What has been done in the United States to prevent this dangerous custom and its unhappy consequences?

The late Dr. Rush, so far as I am informed, is the only person who has published such directions and admonitions on this topic, as he

doubtless believed to be best suited to guard the public against the evil in question.

From the doctor's account of the disorders occasioned by drinking cold water in warm weather, we learn that these accidents seldom happen in Philadelphia, except when the mercury rises above 85 degrees of Fahrenheit's thermometer. Dr. Rush also informs us that "three circumstances generally concur to produce disease or death from drinking cold water. 1. The patient is extremely warm. 2. The water is extremely cold. And, 3. A large quantity of it is suddenly taken into the body. The danger from drinking the cold water is always in proportion to the degrees of combination which occur in the three circumstances that have been mentioned."

The account is concluded with the following advice. "If neither the voice of reason, nor the fatal examples of those who have perished from this cause, are sufficient to produce restraint in drinking a *large* quantity of cold liquors, when the body is *preternaturally* heated, then let me advise to—1. Grasp the vessel out of which you are about to drink for a minute or longer with both your hands. This will abstract a portion of heat from the body, and impart it at the same time to the cold liquor, provided the vessel is made of metal, glass or earth; for heat follows the same laws, in many instances, in passing through bodies, with regard to its relative velocity, which we observe to take place in electricity.

2. If you are not furnished with a cup, and are obliged to drink by bringing your mouth in contact with the stream which issues from a pump, or a spring, always wash your face and hands previous to your drinking, with a little of the cold water. By receiving the shock of the water first on these parts of the body, a portion of its heat is conveyed away, and the vital parts are thereby defended from the action of the cold."*

These principles and precepts have emanated from a source of high medical authority, they have been promulgated and republished in our southern newspapers, and apparently admitted by all as perfect and satisfactory, and as sufficient, if observed, to secure those in danger, from the impending injury.

For all these reasons they deserve a deliberate examination, and if it should be found that they are delusive and fallacious, it is the more necessary that their true character and tendency should be fully understood.

As they now stand, supported by the well-earned reputation of their author, and the submission or approbation of the American people, the first effect they would produce is, to persuade those persons who are most exposed to the danger before us, that if they comply with the condition of the second direction of Dr. R., they may then drink cold water

* Medical Inq. and Obs. vol. 1.

without injury.—If this be the effect of the advice given, it will increase the evil it was intended to prevent.

But in order to estimate the rule correctly, we must first ascertain in what state of the body cold water can be safely taken into the stomach; and this, if we mistake not, is precisely that state in which cold bathing is most grateful and beneficial.

This eminent physician seems to have adopted the popular opinion on this subject, and apprehends the danger to originate from the great difference between the temperature of the body and that of the water drunk. The fact however, says Dr. Currie, is in my mind perfectly established, that there is no situation in which the application of cold to the body, whether to the surface or the stomach, is so safe, or in general so salutary, as when the heat of the body, from whatever cause, is preternaturally great, provided that the body is not already in a state in which it is rapidly parting with this heat, and no disease has taken place in the general sensibility, in the structure of any of the parts, or any derangement or excessive action in the organs of respiration, or in those of the circulation of the blood. And that where the body is preternaturally heated, the degree to which cold water may be drunk, may always be decided by the steadiness of the sensation of heat, the tenacity with which it is retained, and the

regularity with which the vital functions of the system are carried on at the time.

Thus, in *continued* fever it may be drunk to a greater extent, than in the hot stage of intermittents, because the heat is more firmly retained; the profuse perspiration not being at hand, by which the febrile heat of intermittents is carried off. The ancients who gave cold drink largely in continued fever, were doubtful of its use in intermittents.

That cold fluids taken into the stomach in the cold or sweating stage of a paroxysm of intermittent fever, in which the thirst is often excessive, have frequently proved hurtful, there can be no doubt.

The instances, however, that are recorded of the fatal effects of large draughts of cold liquids, have more frequently occurred after severe exercise and fatigue, than even in intermittent fever. The cause of this is obvious.—the heat preternaturally accumulated by exercise, is held with less tenacity than the heat even in intermittents. It is dissipated by the perspiration that exercise occasions, and is speedily lost, when to profuse sweating is added a state of rest. We have now come exactly to that condition of the body in which death occurs from drinking cold water from our pumps, and cold springs. The body is excessively heated not only by the warmth of the sun, but also by exercise, and respiration and the circulation of the blood are often ren-

dered tumultuous, violent, and irregular; the heat is rapidly evaporating by copious perspiration and rest. Is this the time for deciding by indulgence how much cold water the stomach can bear with impunity? The experiment cannot be made without the utmost risk of life.

Recollect for a moment that the state in which the greatest allowable quantity of cold water which can ever be safely applied to the stomach or skin, where fever is not present, is that in which the following circumstances exist at the same time.

1. Preternatural heat, 2. a dry skin, 3. strength, 4. a continued action of the cause or causes which have produced this inordinate heat, and 5. a perfect performance of all the functions of health.

Now let us compare this state of the system with that of the man at the pump who is about to take the fatal draught.

His heat is indeed great, but the causes, or at least one of them, which have excited this heat, has ceased to act; and this heat so far from being firmly retained is fast escaping with the abundant perspiration. So far from being strong, he is more or less exhausted and weakened by his labour and excess of temperature, and perhaps also by profuse sweating; and the great functions of life are more or less hurried, impetuous, and imperfect. Is this the time for indulgence, the time

in which the vital parts are *defended* from the action of cold, because the panting labourer has first grasped the vessel of cold water, because he has washed his face and hands with some of it, and complied with all the other precautions of safety? Whatever the urgency for indulgence, or the excuse for it in this case may be, I venture to assert, that another so full of danger cannot be named.

Postillions understand the difference, adds the doctor, between giving their horses cold water to drink during exercise, and after exercise has ceased. When in their power they always water their horses two or three miles before the end of their journey. My friend, Mr. Charles Aiken, assures me, continues the doctor, that during his tour on foot through Wales, in company with his brother, of which Mr. Arthur Aiken has given so interesting and useful an account, they drank of the pure streams, as they descended from the mountains, without reserve, during the fervour of the day, taking care however never to rest after drinking. Where direct experiment is so full of danger, we must be permitted to derive what aid we can from analogy.

For many years past, during the summer, I have daily used ice in whatever I have drunk at dinner,—in water, beer, cyder, &c., and this more freely as the weather has been warmer. This habit has been agreeable and refreshing. If in this state cold liquids are grateful and

safe, we may well suppose that in an opposite state of the system, they must be more or less deleterious. The only circumstance in common is thirst, but in my case this was natural and compatible with health: in the man at the pump, it is excessive and preternatural. If the preceding views respecting the circumstances under which cold drink after exercise proves injurious, be just, the directions of Dr. Rush to those who *will* drink in such circumstances, are founded on error. By abstracting a part of the preternatural heat of the body before drinking, the danger is not diminished, but greatly increased. If the effects of cold water used internally under severe exercise are not entirely analogous to the effects produced by its affusion on the skin,—the difference will be easily understood by those who consider, that when a quantity of water is swallowed, besides the influence of the cold, the stomach sustains a load, from the weight and the bulk of the liquid, particularly oppressive under the constant action and agitation of the voluntary muscles, from which the surface moistened with water, is entirely free; and on the other hand, that the evaporation from the surface, promoted by the immediate access of the external air, must operate more directly in cooling the body, and particularly in counteracting the burning rays of the sun, than water taken into the stomach. With these exceptions, the operation of cold liquids on the stomach and

on the surface of the body is analogous in the case of preternatural heat produced by bodily exertion, as in all other cases of preternatural heat.

As it is safe to drink cold water in proportion as the heat from exercise is great and steady, so also is it safe, according to this ratio, to pour it on the surface, or to immerse the body in the cold bath.

For many of these sentiments and facts, and much of this language, I am indebted to the late Dr. Currie. I have followed this enlightened and benevolent physician, because there is nothing so valuable on this subject as what he has left us ; and he only, so far as I know, has reviewed Dr. Rush's "Account, &c." with the ability of a master, the liberality of a gentleman, and the candour of a friend.*

Dr. Currie's work is rising in estimation with the progress of time,—and is constantly calling forth, from the best judges of its merit, the testimony of entire confidence in his facts and opinions, and new expressions of gratitude and respect for the genius and philanthropy of its author.

It is wiser to shun temptation than to rush into it, in the vain expectation of escaping unhurt. There are situations however in which men cannot set limits to their efforts, or fatigue, or danger ; but no one retaining his free agen-

* See his Medical Reports, 3d edit. 1st vol.

cy should place himself in that situation in which it is most perilous to drink cold water, and in which he is most tempted to transgress.

A risk so great should not be taken, unless it be to avoid a great danger.

But as no lesson of experience or salutary admonition can impart to all a preventive prudence, if I could influence those who are approaching the pump, my cautions to them should be,—

1. To recollect, that the only state of the body, fever excepted, in which a strong inclination to drink cold water can be fully and safely indulged, is that in which the five conditions enumerated in page 70, are all present.

2. There is no state in which the desire for cold water is so urgent, or its indulgence so hazardous as that already described, and in which cold water taken into the stomach in large quantity, usually occasions disease or death.

3. When you come therefore to the well or the spring, in this situation, your safety can be secured only by doing one of two things; either rinse your mouth, and wash your face and hands with the cold water, *without swallowing a drop of it*, and rest till the intensity of your heat and thirst has somewhat abated before you resume your labour, or exertion, whatever it may be; or, on coming to the pump, much heated, fatigued, sweating, and thirsty, drink a wineglassful, or half a gill only of the water,

taking care to continue your exercise in a less violent degree.

The most eligible and successful method of returning to a comfortable and safe state, from the danger and suffering arising from the combined effects of excessive heat, exertion, perspiration, and thirst,—is to rest for short periods, then to renew a more gentle exercise, avoiding as much as possible the rays of the sun, and taking from time to time, small quantities of some moderately cordial beverage.

THE END.

ERRATA.

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